Cogging Plan

- Re-establish Beam on old DDS firmware then switch to new firmware
- Tune up curves with new DDS firmware
- Re-scan high field aperture using RPOS bump
- Measure emittance vs. RPOS
- Establish cogging on $17 cycles
    1. Multiple notch triggers (all other events will remain on old system)
    2. Need to redo extraction sync firmware (Rev. marker input)
    3. Monitor parameters over period of time (Trip plan drift, notch vs. BES)
    4. Possibly set up pinger to work with Vertical notcher
    5. Work on ACNET parameters
    6. Corrections to software as needed (OAA vs our OAA correction)

- Establish cogging on MI cycle
    1. Using a MI study cycle establish Cogging ($xx ??)
    2. Investigate Extraction jitter and losses (Test Desired Bucket offset)
    3. Simplify turn on/off of cogging (establish semi-permanent setup)
    4. Work on operational diagnostics and ACNET interface

- Establish cogging on multi batch cycles
    1. Sync MI reset with internal Booster marker and Booster gen. OAA
    2. Software/Firmware work ???
    3. ACNET controls
    4. ACNET diagnostics
    5. Notching issues (one Notch early, other notches late in cycle)

- Operational Work
    1. Establish software control over RF curve loading
    2. Diagnostics, Learning Algorithm and other running mode parameters
    3. Spare hardware testing

* Other Related Work: Creating a notch in the pre-acc and synchronizing to it.
Collimator installation and placement – vertical pinging.

Cogging Operational Issues

1) Generation of Cogging Trip Plan
    a. When to make a new trip (guidelines)
    b. Error signal(s) to monitor (gap error at transition, Booster Drift)
    c. Safeguards (beam gate, large gap errors)
    d. Software trigs and normal RF curve loading

2) Control of Cogging
    a. How to enable/disable (similar to notch control)
    b. Signals to datalog (losses, gap position vs OAA)
    c. Pinger timing and Notch trigger alignment
    d. Offset controls (similar to Notch delays)
    e. Control of RF curve loading (Load only on $12 – before cog cycles)
    f. Dedicated scope signals (gap, OAA, Kickers ????)

3) VXI Interface
    a. Ability to send and receive curves and parameters (gains, Trip Plan)
    b. Link with present Notch and Transfer Sync hardware
    c. Make boot and file structure similar to GMPS and LL DDS card

4) Phase Lock and Cogging
    a. Bucket control
    b. Extraction Timing / parameters (Acceptable MI bucket location)